SB761
U7I5
#85-11

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE

# FOREST PEST MANAGEMENT

LIBRARY
SEP 20 1985
ROCKY MOUNTAIN STATION

STATE & PRIVATE FORESTRY

R4-85-11

INTERMOUNTAIN REGION

## BIOLOGICAL EVALUATION OF TREE DISEASES IN THE HENRY MOUNTAINS, RICHFIELD DISTRICT, BLM, UTAH

Frank G. Hawksworth, Brian Geils, and John Coppola 1/
USDA Forest Service, Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colorado

At the request of Mr. Larry Gearhart, BLM Resource Management Specialist, Hanksville, Utah, we examined the tree disease situation in the Henry Mountains on June 25, 1985. Mr. Borys Tkacz, Forest Pathologist with Forest Pest Management in Ogden, was invited to participate in the visit but was unable to attend because of conflicts with a FPM training session on the Dixie National Forest.

We were accompanied on the visit by Mr. Gearhart and Mr. Rodney Greeno, Resources Volunteer with the Hanksville BLM office.

The Henry Mountains are mostly in Garfield County, but the northern slopes of Bull and Ellen Mountains are in Wayne County. The Henry Mountains are among the most inaccessible ranges in the conterminous United States, and are said to be the last mountain range named. The Henry's consist of five major peaks: Mt. Ellen (11,485 ft.), Mt. Pennell (11,320 ft.), Mt. Hillers (10,650 ft.), Mt. Holmes (7,930 ft.), and Mt. Ellsworth (8,150 ft.). Insofar as we have been able to determine, no previous observations on tree diseases have been made in the Henry Mountains. A recent flora of the area (Neese 1981) records two mistletoes (Phoradendron juniperinum on Juniperus osteosperma and Arceuthobium divaricatum on Pinus edulis) but does not discuss their pathological significance.

### The Forests and Their Management

Pinyon-juniper (Pinus edulis/Juniperus osteosperma) is by far the most common forest type in the Henry Mountains and predominates below about 7,000 feet. Large areas of the pinyon-juniper type are being chained and burned to convert them to grasslands. Gambel oak (Quercus gambelii) also occupies large areas of the lower slopes. The higher mountains support a surprisingly high number of conifers (Pinus ponderosa, P. flexilis, P. longaeva, Picea pungens, P. engelmannii, Abies lasiocarpa, Abies concolor, Pseudotsuga menziesii, Juniperus scopulorum, and J. communis). Douglas-fir is the most common mountain conifer. The moister parts of the mountains also have several deciduous trees, especially Populus tremuloides, but also Populus acuminata, P. angustfolia, Acer glabrum, willows, alder, birch, etc. Populus fremontii is a common riparian tree in the lower stream bottoms around the mountains.

1/ Respectively, Plant Pathologists and Forestry Technician

There has been essentially no cutting of the mountain conifers for the past 30 years or more, and many stands have never been logged. Current forest management activities are extremely limited and consist mainly of concern for hazardous trees in the two developed recreational sites: Lone Beaver and McMillan Springs Campgrounds. A few permits are given for removal of corral poles in the spruce-fir zone, but they have very little impact in these dense pole stands. Some trees are cut during establishment of fall hunting camps, but, again, the impact is minor.

## Tree Diseases

The Douglas-fir dwarf mistletoe (Arceuthobium douglasii) was by far the most damaging tree disease observed. It is common in the Bull Creek drainage, on the northeast slope of Mt. Pennell, and probably elsewhere in the Henry Mountains. It is severely brooming Douglas-fir and causing much mortality. The dwarf mistletoe was also found rarely on Abies lasiocarpa near Lone Beaver Picnic Ground, but it was causing little damage to this host.

No dwarf mistletoe was found in ponderosa pine, the stands of this species are perhaps too scattered and sparse to support the parasite. Also, we did not find dwarf mistletoe in Pinus flexilis or P. longaeva, but we did not visit Hillers Peak, where the main stand of P. longaeva is found (Neese 1981). In the pinyon-juniper type, Phoradendron juniperium is common, but not particularly damaging in Utah Juniper. The pinyon dwarf mistletoe (Arceuthobium divaricatum) was noted in several stands (e,g., Bull Mountain and Coyote Benches), but again causing little damage. Witches' brooms caused by the needle-cast fungus Elytroderma deformans are much more common in Pinus edulis than those caused by dwarf mistletoe. However, no tree mortality due to Elytroderma was observed.

Aspen stands had the full complement of diseases typical of this tree in the Rocky Mountains:

Cankers

Sooty-bark canker - (Encoelia pruinosa)
Cryptosphaeria canker - (Cryptosphaeria populina)
Black canker - (Ceratocystis fimbriata)
Hypoxylon canker - (Hypoxylon mammatum)
Cytospora canker - (Cytospora chrysosperma)

Shoot-blights

Shepherd's crook - (Venturia macularis)

Decays

Aspen trunk rot - (Phellinus tremulae)
White root rot - (Ganoderma applanatum)

Sooty-bark canker seemed to be most damaging as several trees killed by it were seen, especially in disturbed areas.

Several rusts on conifers were observed:

1. White-spored gall rust (Peridermium harknessii) was occasionally seen in ponderosa pine.
2. Fir broom rust (Melampsorella caryophyllacearum) was common in subalpine fir.
3. Gymnosporangium juvenescens (witches' broom) and G. nelsonii (gall rust) were common in Rocky Mountain juniper.

A fungus caused witches' broom (Articularia quercina) (Hawksworth and Mielke 1962) was common in all Gambel oak stands examined.

Dense witches brooms of unknown cause (Genetic?) were common in ponderosa pine, and are rare in limber pine in many parts of the mountains.

## Recommendations

Since no forest management activities are planned for the Henry Mountains, no disease control measures are recommended now. However, tree diseases in campgrounds could be cause for concern and hazardous trees should be removed as discovered. The McMillan Springs campground is mainly ponderosa pine and no hazardous trees were noted. However, Lone Beaver picnic and campgrounds are mainly in spruce and Douglas-fir and could require attention to potential hazardous trees as mortality to dwarf mistletoe and root diseases is higher in this forest type. Mr. Gearhart should be provided with information on how to detect potentially hazardous trees in recreational areas.

## References

1. Hawksworth, F.G. and J.L. Mielke. 1962. Witches' brooms of Gambel oak associated with Articularia quercina var. minor. Phytopathology 52:451-454.

2. Neese, E.J. 1981. A Vascular Flora of the Henry Mountains. Ph.D. thesis, Brigham Young University, Provo, Utah 370 p.